

**DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA**

INTERDEPARTMENT CORRESPONDENCE

FILE: EDS00-0545-00(023)(024)(025)(026) Toombs **OFFICE:** Engineering Services
BHN00-0038-01(036)(037)
P.I. Nos.: 522180 522185 522190
522200 522220 522225
US 1/SR 4 Corridor

DATE: July 22, 2011

FROM: Ronald E. Wishon, State Project Review Engineer *REW*

TO: Bobby K. Hilliard, PE, State Program Delivery Engineer
Attn.: Michele Wright

SUBJECT: IMPLEMENTATION OF VALUE ENGINEERING STUDY ALTERNATIVES

The VE Study for the above projects was held April 4-7, 2011. Responses were received on July 21, 2011. Recommendations for implementation of Value Engineering Study Alternatives are indicated in the table below. The Project Manager shall incorporate the VE alternatives recommended for implementation to the extent reasonable in the design of the project.

ALT #	Description	Potential Savings/LCC	Implement	Comments
PI Nos. 522220 and 522225				
A-1	Reduce median width from 44 feet to 32 feet	\$378,000	Yes	This will be done.
A-3	Use right of way to shoulder breakpoint and easements beyond	\$190,000	No	The easements should be permanent to allow for maintenance of drainage along ditches and to provide for accommodation of utilities. The actual cost savings would be less than stated in the VE Study since the appraised value of the easement would be 75% of the ROW cost. (The VE Study used 50%).
B-1	Reduce bridge width from 38 feet to 36 feet for each of the 5 structures	\$1,057,000	Yes	This will be done.

C-2	Reduce paved shoulder width from 6 ½ ft to 4 ft	\$228,000	No	AASHTO states that arterials such as this one have a usable shoulder of at least 8 ft and that paving the usable shoulder is preferred. The 6 ½ ft shoulders should be retained for bicycle accommodation since this project is on the Heart of Georgia Regional Commission's regional bicycle route network.
C-3	Reduce amount of side street work by tying into existing sooner	\$102,000	Yes	This will be done where possible. The actual alignments may vary and the actual savings cannot be calculated without further design.
C-5	Use reduced depth pavement for the medians and turn lanes	\$324,000	No	No consideration was given to the cost of constructability. The contractor would be required to grade the median and turn lanes to a different typical than the through lanes. This change in constructability may offset the savings estimated by the VE Team.
PI No. 522180				
A-1	Reduce median width from 44 feet to 32 feet	\$357,000	Yes	This will be done.
A-3	Use right of way to shoulder breakpoint and easements beyond	\$93,000	No	The easements should be permanent to allow for maintenance of drainage along ditches and to provide for accommodation of utilities. Slopes 3:1 or steeper will also require maintenance. The actual cost savings would be less than stated in the VE Study since the appraised value of the easement would be 75% of the ROW cost. (The VE Study used 50%).

C-2	Reduce paved shoulder width from 6 ½ ft to 4 ft	\$118,000	No	AASHTO states that arterials such as this one have a usable shoulder of at least 8 ft and that paving the usable shoulder is preferred. The 6 ½ ft shoulders should be retained for bicycle accommodation since this project is on the Heart of Georgia Regional Commission's regional bicycle route network.
C-3	Reduce amount of side street work by tying into existing sooner	\$345,000	Yes	This will be done where possible. The actual alignments may vary and the actual savings cannot be calculated without further design.
C-5	Use reduced depth pavement for the medians and turn lanes	\$277,000	No	No consideration was given to the cost of constructability. The contractor would be required to grade the median and turn lanes to a different typical than the through lanes. This change in constructability may offset the savings estimated by the VE Team.
PI Nos. 522190 and 522185				
A-1	Reduce median width from 44 feet to 32 feet	\$278,000	Yes	This will be done.
A-3	Use right of way to shoulder breakpoint and easements beyond	\$70,000	No	The easements should be permanent to allow for maintenance of drainage along ditches and to provide for accommodation of utilities. There are ditches along 57% of the roadway. Slopes 3:1 or steeper will also require maintenance. The actual cost savings would be less than stated in the VE Study since the appraised value of the easement would be 75% of the ROW cost. (The VE Study used 50%).
B-1	Reduce bridge width from 38 feet to 36 feet for each of the 2 structures	\$114,000	Yes	This will be done.

C-2	Reduce paved shoulder width from 6 ½ ft to 4 ft	\$92,000	No	AASHTO states that arterials such as this one have a usable shoulder of at least 8 ft and that paving the usable shoulder is preferred. The 6 ½ ft shoulders should be retained for bicycle accommodation since this project is on the Heart of Georgia Regional Commission's regional bicycle route network.
C-3	Reduce amount of side street work by tying into existing sooner	\$122,000	Yes	This will be done where possible. The actual alignments may vary and the actual savings cannot be calculated without further design
C-5	Use reduced depth pavement for the medians and turn lanes	\$185,000	No	No consideration was given to the cost of constructability. The contractor would be required to grade the median and turn lanes to a different typical than the through lanes. This change in constructability may offset the savings estimated by the VE Team.
PI No. 522200				
A-1	Reduce median width from 44 feet to 32 feet	\$1,065,000	Yes	This will be done.
A-1.1	Reduce median width from 44 feet to 20 feet with a cable barrier	\$1,455,000	No	This will not be done, because A-1 will be implemented.
A-3	Use right of way to shoulder breakpoint and easements beyond	\$1,798,000	No	The easements should be permanent to allow for maintenance of drainage along ditches and to provide for accommodation of utilities. There will be ditches along the majority of the roadway, and they must be maintained. Slopes 3:1 or steeper will also require maintenance. The actual cost savings would be less than stated in the VE Study since the appraised value of the easement would be 75% of the ROW cost. (The VE Study used 50%).


B-1	Reduce bridge width from 38 feet to 36 feet for each of the 4 structures	\$338,000	Yes	This will be done.
B-3	Use MSE wall on railroad end of bridge to shorten bridge over railroad/US 280 crossing	\$283,000	No	There are more long-term maintenance issues with MSE walls constructed at bridge abutments than there are with typical spill through abutments. MSE wall abutments limit the possibility of future expansion for both the road being carried as well as the facility beneath the structure. Due to sequence of construction, coordination with subcontractors and equipment, bridge costs and wall costs are higher than the general bridge and wall costs for separate structures.
B-4	Eliminate bridges at SR 30 and SR 292 and provide an at-grade crossing	\$7,278,000	No	Separating the traffic movements has been shown to reduce crash frequency and severity. The proximity of the track to SR 30/US 280 does not provide enough storage room for the traffic. This would impact operation of the bypass and SR 30/US 280 when vehicles turning right must stop for the train.
B-4.1	Eliminate bridges at SR 292	\$2,785,000	No	The vertical curves required to bring the roadway to an at-grade intersection with SR 292 do not meet 45 mph. The speed design for the roadway will be reduced to 55 mph. See D-1.
C-2	Reduce paved shoulder width from 6 ½ ft to 4 ft	\$175,000	No	AASHTO states that arterials such as this one have a usable shoulder of at least 8 ft and that paving the usable shoulder is preferred. The 6 ½ ft shoulders should be retained for bicycle accommodation since this project is on the Heart of Georgia Regional Commission's regional bicycle route network.
C-3	Reduce amount of side street work by tying into existing sooner	\$175,000	Yes	This will be done where possible. The actual alignments may vary and the actual savings cannot be calculated without further design.

Implementation of Value Engineering Study Alternatives

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C-5	Use reduced depth pavement for the medians and turn lanes	\$324,000	No	No consideration was given to the cost of constructability. The contractor would be required to grade the median and turn lanes to a different typical than the through lanes. This change in constructability may offset the savings estimated by the VE Team.
C-6	Realign the by-pass to utilize more of the existing pavements south of Lyons	\$203,000	No	There is a mobile home community that lies in the path of the alignment proposed by this recommendation. Relocation cost for the mobile homes was not considered. Relocation of this community may present environmental justice issues. This alignment will require lake restoration as well as stream impacts which were not addressed in the VE study cost calculations. Also likely is the relocation of a home and/or impacts to a business. Utility relocation (approximately \$65,000) was not considered.
D-1	Reduce design speed to 55 mph	\$508,000	Yes	This will be done.

The Office of Engineering Services concurs with the Project Manager's responses.

Approved:  Date: 7/27/2011
Gerald M. Ross, PE, Chief Engineer

REW/LLM
Attachments

c: Russell McMurry
Bobby Hilliard/Stanley Hill/Michel Wright
Russell McMurry/Jason McCook/David Acree/Angelo Yokaris
Brad McManus/Frantz Boileau
Paul Liles/Ben Rabun/Bill Duvall/Bill Ingalsbe
Michael Hester
Brad Saxon/Will Murphy/Bryan Czech
Ken Werho
Lisa Myers
Matt Sanders

DEPARTMENT OF TRANSPORTATION STATE OF GEORGIA

INTERDEPARTMENTAL CORRESPONDENCE

FILE EDS00-0545-00(023)(024)(025)(026), Toombs
BHN00-0038-01(036)(037), Toombs
P.I. 522220/522180/522190/522200/522185/522225
SR 4/US 1 Corridor from North of
Williams Creek to SR 130/Fisher Barfoot Highway

OFFICE Program Delivery
DATE July 20, 2011

FROM ^{S.H.} Bobby K. Hilliard, P.E., State Program Delivery Engineer

TO Ronald E. Wishon, State Project Review Engineer
Attention: Lisa Myers

SUBJECT **Value Engineering Study Report Responses**

The above referenced projects consist of 21.76 miles of Widening and Reconstruction of SR 4/US 1 from North of Williams Creek to SR 130/Fisher Barfoot Highway.

The Office of Roadway Design and the Office of Bridge Design have responded to the Value Engineering Study Report recommendations. Concurrences from the appropriate GDOT Offices are also attached.

The Office of Program Delivery concurs with the implementation recommendations by the Office of Roadway Design and the Office of Bridge Design as well as recommendations provided by the Office of Traffic Operations, the Office of Utilities, the Office of Bridge Design, and the Office of Design Policy and Support.

If there are any questions, please contact Michelle Wright of this Office at (912) 271-7562.

^{S.H.}
BKH: SH: MW

Attachments

cc: Russell McMurry, Director of Engineering

Roadway Response to VE recommendations made by the VE team for US 1 / SR 4 Corridor Improvements

Toombs County

Project No EDS00-545-00(23); PI Nos. 522220 and 522225

A: Right of Way

A-1: Reduce median width from 44 to 32 feet edge of pavement to edge of pavement. This recommendation reduces the median width which complies with recent GDOT Standards as well as with AASHTO Guidelines. Reducing width would also result in reduced impacts to environmentally sensitive areas within the corridor. Savings results in R/W, earthwork, clearing and grubbing, grassing and pavement for the crossovers.

The total potential savings is \$378,000

Roadway Design Response: Yes, this will be implemented.

A-3: Use right of way to shoulder break and easements beyond. Savings in the costs of right of way using this practice could be substantial. The easement section would include the slopes and ditches outside the shoulder break.

The total potential savings is \$190,000

Roadway Design Response: No, this will not be implemented. The easements would need to be permanent to allow for maintenance of drainage along ditches and provide for utility accommodations. The actual cost savings would be less than stated in the VE study since the appraised value of the easement would be 75% of the right of way cost (the VE study placed the value at 50%).

B: Structures

B-1: Reduce the bridge width from 38 feet (gutter to gutter) to 36 feet for each of the five (5) structures included in this project. This is based on the accepted bridge widths in GDOT bridge and structures policy manual for rural section (multi-divided) including a 4 ft. (inside shoulder) +TW+ 8 ft. (outside shoulder).

The total potential savings is \$1,057,000

Bridge Design Response: Yes, this will be implemented.

C: AC Pavement

C-2: Reduce paved shoulder width from 6.5 feet to 4 feet. The purpose of the project is to increase capacity by providing additional through lanes. This can be accomplished with 4' paved shoulders. AASHTO guidelines do not mandate a required paved shoulder width. Savings shown reflects savings in pavement only.

The total potential savings is \$228,000

Roadway Design Response: No, this will not be implemented. AASHTO Policy on Geometric Design of Highways and Streets states that arterials such as this one have a usable shoulder of at least 8' and that paving of the usable shoulder is preferred. Also, the 6.5' paved shoulder

will be retained on this project for bicycle accommodation since this route is on the Heart of Georgia Regional Commission's regional bicycle route network.

C-3: Reduce the amount of side street work. This idea involves reducing the length of some of the side street connections. The idea evaluated 3 intersections, CR 49, CR 51 and CR 52.

The total potential savings is \$102,000

Roadway Design Response: Yes, this will be partially implemented. The recommendation will be implemented in principal but the actual alignment may vary and so the actual savings may vary as a result. Further design is necessary by Roadway design to determine the actual savings.

C-5: Use reduced depth pavement for medians and left turn lanes. Because of the lighter traffic loadings for these areas, a thinner pavement section than the mainline, full-depth section will reduce asphalt, grading and GAB costs.

The total potential savings is \$324,000

Roadway Design Response: No, this will not be implemented. It appears no consideration of the cost of constructability of the contractor for having to grade the median to different typicals than the through lanes. This change in constructability may offset the savings estimated by the VE team.

Project No EDS00-545-00(24); PI No. 522180

A: Right of Way

A-1: Reduce median width from 44 to 32 feet edge of pavement to edge of pavement. This recommendation reduces the median width which complies with recent GDOT Standards as well as with AASHTO Guidelines. Reducing the width would also result in reduced impacts to environmentally sensitive areas within the corridor. Savings results in R/W, earthwork, clearing and grubbing, grassing and pavement for the crossovers.

The total potential savings is \$357,000

Roadway Design Response: Yes, this will be implemented.

A-3: Use right of way to shoulder break and easements beyond. Savings in the costs of right of way using this practice could be substantial. The easement section would include the slopes and ditches outside the shoulder break.

The total potential savings is \$93,000

Roadway Design Response: No, this will not be implemented. This is due to maintenance and lower than predicted savings. There are ditches along the majority of the road and these must be maintained. Slopes 3:1 or steeper will also need to be maintained. The actual cost savings would be less than stated in the VE study since the appraiser may appraise the value of the easement to be 75% of the right of way cost (the VE study placed the value at 50%). There is also the cost of utility relocation that would have to be considered.

C: AC Pavement

C-2: Reduce paved shoulder width from 6.5 feet to 4 feet. The purpose of the project is to increase capacity by providing additional through lanes. This can be accomplished with 4' paved shoulders. AASHTO guidelines do not mandate a required paved shoulder width. Savings shown reflects savings in pavement only.

The total potential savings is \$118,000

Roadway Design Response: No, this will not be implemented. AASHTO Policy on Geometric Design of Highways and Streets states that arterials such as this one have a usable shoulder of at least 8' and that paving of the usable shoulder is preferred. Also, the 6.5' paved shoulder will be retained on this project for bicycle accommodation since this route is on the Heart of Georgia Regional Commission's regional bicycle route network.

C-3: Reduce the amount of side street work. This idea involves reducing the length of some of the side street connections. The idea evaluated 4 intersections, CR 106, CR 103, CR 101 and CR 98/102.

The total potential savings is \$345,000

Roadway Design Response: Yes, this will be partially implemented. The recommendation will be implemented in principal but the actual alignment may vary and so the actual savings may vary as a result. Further design is necessary by Roadway design to determine the actual savings.

C-5: Use reduced depth pavement for medians and left turn lanes. Because of the lighter traffic loadings for these areas, a thinner pavement section than the mainline, full-depth section will reduce asphalt, grading and GAB costs.

The total potential savings is \$277,000

Roadway Design Response: No, this will not be implemented. Also there was no consideration of the extra cost to the contractor for having to grade the median to a different level than the through lanes. This change in construction may offset the savings estimated by the VE team.

Project No EDS00-545-00(25); PI Nos. 522190 & 522185

A: Right of Way

A-1: Reduce median width from 44 to 32 feet edge of pavement to edge of pavement. This recommendation reduces the median width which complies with recent GDOT Standards as well as with AASHTO Guidelines. Reducing the width would also result in reduced impacts to environmentally sensitive areas within the corridor. Savings results in R/W, earthwork, clearing and grubbing, grassing and pavement for the crossovers.

The total potential savings is \$278,000

Roadway Design Response: Yes, this will be implemented.

A-3: Use right of way to shoulder break and easements beyond. Savings in the costs of right of way using this practice could be substantial. The easement section would include the slopes

and ditches outside the shoulder break.

The total potential savings is \$70,000

Roadway Design Response: No, this will not be implemented. This is due to maintenance and lower than predicted savings. There are ditches along 57% of the road and these must be maintained. Slopes 3:1 or steeper will also need to be maintained. The actual cost savings would be less than stated in the VE study since the appraiser may appraise the value of the easement to be 75% of the right of way cost (the VE study placed the value at 50%). There is also the cost of utility relocation that would have to be considered.

B: Structures

B-1: Reduce the bridge width from 38 feet (gutter to gutter) to 36 feet for each of the two (2) structures included in this project. This is based on the accepted bridge widths in GDOT bridge and structures policy manual for rural section (multi-divided) including a 4 ft. (inside shoulder) +TW+ 8 ft. (outside shoulder).

The total potential savings is \$114,000

Bridge Design Response: Yes, this will be implemented.

C: AC Pavement

C-2: Reduce paved shoulder width from 6.5 feet to 4 feet. The purpose of the project is to increase capacity by providing additional through lanes. This can be accomplished with 4' paved shoulders. AASHTO guidelines do not mandate a required paved shoulder width. Savings shown reflects savings in pavement only.

The total potential savings is \$92,000

Roadway Design Response: No, this will not be implemented. AASHTO Policy on Geometric Design of Highways and Streets states that arterials such as this one have a usable shoulder of at least 8' and that paving of the usable shoulder is preferred. Also, the 6.5' paved shoulder will be retained on this project for bicycle accommodation since this route is on the Heart of Georgia Regional Commission's regional bicycle route network.

C-3: Reduce the amount of side street work. This idea involves reducing the length of some of the side street connections. The idea evaluated 1 intersection, CR 115.

The total potential savings is \$122,000

Roadway Design Response: Yes, this will be partially implemented. The recommendation will be implemented in principal but the actual alignment may vary and so the actual savings may vary as a result. Further design is necessary by Roadway design to determine the actual savings.

C-5: Use reduced depth pavement for medians and left turn lanes. Because of the lighter traffic loadings for these areas, a thinner pavement section than the mainline, full-depth section will reduce asphalt, grading and GAB costs.

The total potential savings is \$185,000

Roadway Design Response: No, this will not be implemented. Also there was no consideration of the extra cost to the contractor for having to grade the median to a different level than the through lanes. This change in construction may offset the savings estimated by the VE team.

Project No EDS00-545-00(26); PI No. 522200

A: Right of Way

A-1: Reduce median width from 44 to 32 feet edge of pavement to edge of pavement. This recommendation reduces the median width which complies with recent GDOT Standards as well as with AASHTO Guidelines. Reducing the width would also result in reduced impacts to environmentally sensitive areas within the corridor. Savings results in R/W, earthwork, clearing and grubbing, grassing and pavement for the crossovers.

The total potential savings is \$1,065,000

Roadway Design Response: Yes, this will be implemented.

A-1.1: Reduce median width from 44 to 20 feet and use a cable barrier. The same benefits as A-1. A 20 foot median can be used with a cable barrier installed two feet off the center of the median to account for cable deflection and still prevent vehicle crossovers. This recommendation is more suitable for this project due to increased R/W costs.

The total potential savings is \$1,455,000

Roadway Design Response: No, this will not be implemented. Depth of ditch would be dramatically reduced requiring additional drainage structures offsetting the cost savings proposed by the VE Team. Will implement A-1.

A-3: Use right of way to shoulder break and easements beyond. Savings in the costs of right of way using this practice could be substantial. The easement section would include the slopes and ditches outside the shoulder break.

The total potential savings is \$1,798,000

Roadway Design Response: No, this will not be implemented. This is due to maintenance and savings that will be lower than predicted. There will be ditches along the majority of the road and these must be maintained. Slopes 3:1 or steeper will also need to be maintained. The actual cost savings would be less than stated in the VE study since the appraiser may appraise the value of the easement to be 75% of the right of way cost (the VE study placed the value at 50%). There is also the cost of utility relocation that would have to be considered.

B: Structures

B-1: Reduce the bridge width from 38 feet (gutter to gutter) to 36 feet for each of the four (4) structures included in this project. This is based on the accepted bridge widths in GDOT bridge and structures policy manual for rural section (multi-divided) including a 4 ft. (inside shoulder) +TW+ 8 ft. (outside shoulder).

The total potential savings is \$338,000

Bridge Design Response: Yes, this will be implemented.

B-3: Use MSE wall on railroad end of bridge to shorten the bridge over railroad / US 280 crossing. Using a MSE wall would allow the bridge structure to be shortened by 72 feet. This savings offsets the cost for the wall.

The total potential savings is \$283,000

Bridge Design Response: No, this will not be implemented. There are more long-term maintenance issues with MSE walls constructed at bridge abutments than there are with typical spill through abutments. MSE wall abutments limit the possibility of future expansion for both the road being carried as well as the facility beneath the structure. Due to sequence of construction, coordination with subcontractors and equipment, bridge costs and wall costs are higher than the general bridge and wall costs for separate structures.

B-4: Eliminate bridges at SR 30 and SR 292 and provide an at-grade railroad crossing. Based on information received during the study, there are only 2-4 trains per day along this corridor which represents a relatively low volume use. Eliminating the bridges and constructing an at-grade crossing would significantly reduce construction costs and long term bridge maintenance. Conditions and signalization at an at-grade RR crossing can be improved by enhanced crossings with double gates and warning signals.

The total potential savings is \$7,278,000

Roadway Design Response: No, this not will be implemented. Separating the traffic movements has been shown to reduce crash frequency and severity. Also the proximity of the track to SR 30/US 280 means there would be no storage for design vehicles. This would also severely impact operations of the bypass and SR 30/ US 280 when vehicles turning right must stop for the train.

B-4.1 Eliminate bridges at SR 292. As an alternate to B-4 above, the new bridges at SR 292 are proposed due to the proximity of SR 292 to the new RR crossing, a distance of about 800 feet. Eliminating these bridges and reconstructing new pavement and earthwork on SR 292 will significantly reduce costs while providing the same function and eliminate costly bridges. It would provide an at-grade crossing which is more direct connectivity between the 2 state routes. This would eliminate the side loop ramp also.

The total potential savings is \$2,785,000

Roadway Design Response: No, the vertical curves necessary to bring the roadway to an at grade intersection with SR 292 do not meet 45 mph. The speed design for the roadway for the project will reduced to 55 mph. See D-1 which will be implemented.

C: AC Pavement

C-2: Reduce paved shoulder width from 6.5 feet to 4 feet. The purpose of the project is to increase capacity by providing additional through lanes. This can be accomplished with 4' paved shoulders. AASHTO guidelines do not mandate a required paved shoulder width. Savings shown reflects savings in pavement only.

The total potential savings is \$175,000

Roadway Design Response: No, this will not be implemented. AASHTO Policy on Geometric Design of Highways and Streets states that arterials such as this one have a usable shoulder of at least 8' and that paving of the usable shoulder is preferred. Also, the 6.5' paved shoulder will be retained on this project for bicycle accommodation since this route is on the Heart of Georgia Regional Commission's regional bicycle route network.

C-3: Reduce the amount of side street work. This idea involves reducing the length of some

of the side street connections. The idea evaluated 1 intersection, CR 295.

The total potential savings is \$175,000

Roadway Design Response: Yes, this will be partially implemented. The recommendation will be implemented in principal but the actual alignment may vary and so the actual savings may vary as a result. Further design is necessary to determine the actual savings.

C-5: Use reduced depth pavement for medians and left turn lanes. Because of the lighter traffic loadings for these areas, a thinner pavement section than the mainline, full-depth section will reduce asphalt, grading and GAB costs.

The total potential savings is \$324,000

Roadway Design Response: No, this will not be implemented. Also there was no consideration of the extra cost to the contractor for having to grade the median to a different level than the through lanes. This change in construction may offset the savings estimated by the VE team.

C-6: Realign the bypass to utilize more of the existing pavement south of Lyons.

Realigning the by-pass alignment will reduce construction costs and maintain the current design approach of existing pavement re-use, where feasible. The estimated distance is about 2,000 feet. Detailed topographic and environmental constraints will have to be identified prior to final layout, however there do not appear to be any critical issues at this phase.

The total potential savings is \$203,000

Roadway Design Response: No, this will not be implemented. There is a mobile home community that lies in the path of this recommendation. Relocation Costs for the mobile homes was not considered, which may present environmental justice issues. This suggested alignment will require lake restoration as well as stream impacts which were not addressed in the costs. There is also the likely relocation of a home and/or impacts to a business. Utilities relocation was not considered costing around \$65,000.

D: Unclassified Excavation

D-1: Reduce design speed to 55 mph. Reducing the design speed to 55 mph will allow the designers more flexibility to develop an economical and appropriate design. The most critical area is at the new bridges over SR 30, the RR and SR 292. Increasing the grades from 3% to 4 % will yield significant cost savings in earthwork. The project to the north, PI 522130 has already implemented 55 mph for the design speed and this would represent a continuation of that through the by-pass alignment.

The total potential savings is \$508,000

Roadway Design Response: Yes, this will be implemented.